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**James Parson\*** ([parson@hood.edu](mailto:parson@hood.edu)), 401 Rosemont Avenue, Frederick, MD 21701. *Computing the regular locus of a finitely presented scheme over  $\mathbb{Z}$ .*

The regular locus of a variety over an algebraically closed field (its nonsingular part) can be computed using a Jacobian criterion. Nagata has analyzed regular loci of Noetherian schemes, where the Jacobian criterion no longer applies. His analysis shows, in particular, that the regular locus of a finitely presented  $\mathbb{Z}$ -scheme is open. We will discuss an algorithm for computing such open sets using Groebner bases for finitely presented  $\mathbb{Z}$ -algebras and prime factorization in  $\mathbb{Z}$ . (Received September 25, 2018)